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22 wavâhuigâ xuigâtcŏâlĕ or xu'agâvuavâ xu'agâ tcŏâlĕ
23 wavâhu'agâ hûmugâ tcŏâlĕ or xu'agâvow'avâ hûmugâ tcŏâlĕ
30 wavahumugâ or humûgâvuwâvâ
40 wavâhopa" or hopadjĕvuwâvâ
41 wavâhopa" sî'tigtcŏâlĕ or hopadjĕvuwâva sîtîgtcŏâlĕ
50 wavâ6et'apâ or 6ît'apâvuwâvâ
60 wavâtĕcpâ' or tĕcpaivuwâvâ
70 wavâxuagâcpâ' or xuagâcpaivuwâvâ
74 wavâxuagâcpâ'hopaktcŏâlĕ or xuagâcpaivuwavâ hopak tcŏa'lĕ
77 wavâxuagâcpâ'xuwagâcpâ"tcŏâlĕ or xuagâcpaivuwavâ xuwagâcpâ"tcŏâlĕ

One to five, nine, and ten are independent stems: six is presumably based on one, seven on two, and eight on three.[1] Twenty is either ten-two or two-ten: twenty-two is compounded of ten-two and two, and so on.

805 Four seasons of the year are named, although it is doubtful that these are thought of as definite divisions: *dicâdîgd*, winter; *înyâdîtâyd*, summer; *n„Imuwâmîmd*, spring (March and April); and *matmânîmd*, fall (October and November).

Years are said to be counted by snows (*Aandpaicd*); a myth gives a duration of ten winters (*icâdîn„dewaded*).[2] Shorter periods are designated in months, i.e., moons[3] (as *hâldhop'dgd*, four months) or in sleeps (as *hopa'djâmâ'g*, four sleeps).

The calendar presents the confusion commonly observed where twelve named periods are intended to correspond to the thirteen lunar months, and because some of them begin with the appearance of certain constellations there is further confusion. In addition, my information is not clear.

The year begins in the middle of November when the Hoop constellation rises. The following list of months was obtained in August, 1918 from Sinyella.

1. sûldjô'lâ, hand + to come.
Cottonwood leaves fall.
[821] Begins with the rising of Tavâdjûdâ, the hoop of the hoop-and-pole game, at dawn in the southeast. One of the culture heroes fixed this as indicating the first month. (Rose November 4, 1919.)
2. hâlâ'pagtuyuwêva, moon + [man] staying at a house.[4]
Cool; a little snow on the plateau.

[1] neglected to record in my notes the numbers from eleven to nineteen, but as I recall eleven is wundrâtcŏâlĕ, and so on.
[2] There are no calendar records of the Pimans type [Russell, (4), 75-80.]
[3] San Carlos men kept track of a child's age by moons (Hrdlicka (4), 469). For the division of the day and year among the Yuma, see Tröppel, 374.
[4] This may refer to the winter solstice.

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2. i'pedja'ẃlia, the name of a constellation rendered ip'tha in a myth, (from i'i, wood, pik, to carry.)

Very cold; snow nine to twelve inches deep on the plateau.

Begins with the appearance in the southeast of a constellation representing Coyote carrying a pole of smaller stars on his shoulder. Mountain Lion came to his camp and ate his food. Coyote was angry. They told him to get a long pole and build a fire. He did not want to burn his pole, so they told him to go to the west and come back from the east. (Rose December 12 or 13, 1919.)

This is called the second month in a letter from Jess Cherkaŋanyega giving the date on which the group arose. As this is only a month later than the first fixed date (Nov. 4, 1919) this information is probably correct. The month listed as second is perhaps the third, for the fixed date for the fourth month (Feb. 6, 1920) is two months later, leaving one lunation unnamed.

4. hĕmtaſkâ'dielia, star+very cold

Bitter cold; snow thigh deep.

Begins with the appearance of a constellation (Fig. 3b1) in the east. (Rose about February 6, 1920.) This group may represent a portion of the constellation Perseus including the star alpha which would be visible in the northeast in December, January, and February in the early evening.[1]

5. mădigimaſâ, bean dance.

A little warm; snow a foot deep now melts a little.

The Hopi plant beans in a bucket and build a fire near it. They boil the sprouts and have a dance for joy, I was told. This is the Hopi Powamu ceremony which occurs early in February.[2] My informant said this month is not counted, hence its name may be an alternative for the fourth month.

6. măwaſipûk, warmed.

Warmer; snow melts lower [March.]

7. măwalăi'dvisgâ, warm+half-way

Some begin to plant when the last crescent of the moon shows.

[Leaving out the fifth month, this is April: planting begins in mid-April.]

8. măwaifkătăvăôvâ, warm+gone. (The moon is gone by the end of this month.)

Planting during this month [May].

9. myătăpê'k, sun+to make [warm?]

Hot; planting ended; alfalfa high and cottonwood in full leaf [June.]

10. myăkătuyumiyă'kâ

A little rain [July.]

"We do not count this month."

11. gălustăsăpe'gâ, thunder storm

Summer storms begin when this moon is half gone [August.]

The current month was given as gafω'pabud on August 31, 1921.

12. gălupê'kteiwê'k.

Many storms with floods [September.]

[1] Dr. C. D. Shaw was kind enough to suggest identifications of these star clusters on the basis of my informant's fragmentary data.

[2] Voth, 72, 83.

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805 821 The list is apparently incomplete and garbled, yet I have attempted to give the approximately corresponding months in our calendar on the basis of the dating of the constellations and the descriptions of the seasons.

It is obvious that twelve names cannot do duty for not quite thirteen lunations and it is manifest that the Havasupai do not attempt the impossible. I was told that these are not intended to coincide with the lunar months and that the days are not counted. It seems that what I [171] found true of the Southern Diegueño applies here: that these Indians are interested only in designating a series of periods without attempting to fix their limits, and these periods are roughly the lunations, the names of which are variable and frequently in doubt. The only certain months are those fixed by the appearance of the several star clusters, and these all occur at the beginning of the Havasupai year. There can be no question here of intercalation of the thirteenth lunation in a twelve name series.

There is some suggestion that the months begin with the full moon.

Month	*Began*	*Full Moon*
1st–1917	Middle of November	Nov. 28, 1917
1st–1919	Nov. 4, 1919	Nov. 7, 1919
3rd (or 2nd)– 1919	Dec. 12 or 13, 1919	Dec. 7, 1919
4th–1920	Feb. 6, 1920	Feb. 4, 1920

The solstices are recognised. Sinyella has a definite place where he stands to observe both solstices at sunrise. Presumably the other fixed points are pinnacles, etc., on the canyon walls. (Normally the canyon is deserted in mid-winter.) The winter solstice (*n„avökig*, coming back) occurs when the moon is half full. Sinyella fixed this as December 30, 1919. The summer solstice is *inydhIn„an„ndwaha*, the sun is home. I did not learn of any rituals connected with these dates.

Time is indicated chiefly by the position of the sun.

n„lmiθá'vumá	day time
inya"dji'áligigá	sun barely risen
inyá'tapévigigá	sun risen half way
inyá'viluwivigá	noon (sun in the middle[1])
inyádcapévigá	sun halfway down
inyátá'pmigá	sun fallen out of sight
naták'épigá	night
naták'épvíluwivigá	midnight
dju'vn„mθavàn igpaílm	before the dawn
halává'pigigá	dawn.

[173] The moon (*hald*) is a man or a man's head. A myth also describes it as a disk chipped out of ice.

[1] Or the sun making no progress; compare o'luvíluwivigá, horses resting nose to nose.

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A knotted cord or quipu (*dûtsuwddjîgâ*) is used to add formality to an invitation to another tribe or in accepting an invitation from them. The cord, which is carried by the messenger, contains a knot for each sleep which will elapse before the meeting. One knot is cut off each night: the last one, which is by itself at the end of the cord, represents the meeting. Thus the Havasupai sent one, made by the reservation policeman, to the Navaho at large by a member of that tribe. This had seventeen knots and referred to a dance held in September, 1919. Two instances of quipus brought by Walapai were noted; both invitations of local chiefs to mourning ceremonies. On August 26, 1921 a Navaho, who was not a chief, gave one with ten knots to Supai Jack, a prominent man, with the information that the Navaho would arrive at the Havasupai village in the afternoon or evening of September fourth.

These are not used as mnemonic devices, nor do they use notched sticks in this way.

A family may keep track of the return of a traveler by marking on a stone or post, erasing a mark for each sleep as it elapses.

Six directions are recognized: the four cardinal points, the zenith, and the nadir.

north	máłávígà
west	nyatópovî (sun's setting place)
south	kâwévígà
east	nyádjà'álovê (sun's rising place)
zenith	amiávígà or hmiatávígà (middle of the sky)
nadir	matviálà or àmôtávígà (middle of the ground)

The place where the speaker is (àmôtàtu"waiyû'g, ground where I am), is not considered a direction. In naming the directions they are given in the order north, west, south, and east.[1] There is no color-direction association.

Color terms are as follows:—

hnyágà or hnyádj	black
hnyaé'gà	brown
áhwô'tígà	red
gwalaé'gà	pink
ágwáôg	yellow
nyłmaá'vá	white
vaadwá	blue-green
vahaadgà (?)	blue
vahaaółtávágà	green

[1] The Navaho order is east, south, west, north, zenith, and nadir (Franciscan Fathers, 55; Stephen, 64, 302); that of the Hopi north, west, south, and east (Parsons, (a), 33). That of the Pima in lighting a funeral pyre is south, east, north, and west (Curtis, II, 72). The San Carlos Apache circuit is like the Navaho, east, south, west, and north (Goddard, (f), 7.)

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822 The familiar blue-green confusion occurs here, but the Indians of course
151 recognise and designate the difference between the colors whenever the occasion requires. Spotted (*n¸ûdlgd*) and variegated are not colors.

Comparative Notes

The beginning of winter (mid-November) as the initial point of the
171 Havasupai calendar has its counterpart throughout the Basin, Plains,
805 and the interior of British Columbia, according to Cope's summary.[1] In this vicinity, the Navaho year begins about October[2]; the Yavapai in September, and the Southern Diegueño in September or November.[3] This extends the distribution of this type further south. On the other hand the calendar turns on the solstices in the Pueblos and in southern California.

The month names are in general descriptive as in most North
x American calendars. Unlike the Hopi, Hano, Zuñi, and Southern Diegueño, these are not divided into two series of six repeated names.

Some suggested identities among the constellations recognised by
171 tribes in this area follow[4].
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Luiseño	*No. Diegueño*	*So. Diegueño*	*Yuma*	*Mohave*	*Yavapai*	*Havasupai*
		Hand (5 stars)				Hoop (5 stars) (Month name, Hand+to come)
		Begins year November or September				Begins year November
		Buzzard (in third month) January or November				
		Cïlûk (in fourth month) December?				Coyote (in second (month) December
						Cold star (Perseus?) February

[1] Cope, map 2.
[2] Franciscan Fathers, 88.
[3] Corbusier, 330; Spier, (a), 347. Cope classes the Yavapai case (called Tonto), marked by seed-gathering in September, with the harvest or summer type of calendar beginning, but seed-gathering belongs with the winter round of activities in this region. The Diegueño case is classed with the solstitial type, but there is no authority for this. Their year begins in September (or November, see below) when the weather turns sharp.
[4] De Huis, (a), 183, 184; Waterman, footnote 56; Spier, (a), 319, 347; Tripp, 373; Corbusier, 334.

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Hulaish or hula'-chum	Mu or amu, mountain sheep	Amu, mountain sheep	A-mau	Amo, moun-tain sheep	Mn-'u, moun-tain sheep
(3 stars) (Orion)	(Orion)	(3 stars)	(3 stars) (Great Bear)	(3 stars) (Orion)	(Orion's belt)

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The Southern Diegueño *Hand*, a group of five stars, appears in the morning and marks the beginning of the year, in all of which it corresponds to Havasupai *Hoop* (Fig. 30a). A further identity lies in the name of the first Havasupai month, *hand+to come*. This suggests either that the correct name of their constellation is *Hand*, that the name has been borrowed and used in a new sense, or that this is an old name for the month common to the two, the Diegueño having changed their designation or the Havasupai their constellation. At first sight the greatest [805]

Fig. 30. Constellations. *a*, Hoop; *b*, Coyote and Pole; *c*, Cĭlŭk (Southern Diegueño), *d*, Cold Star (from native sketches).

discrepancy is that the Diegueño date is September and the Havasupai November. But my Diegueño information was confused, while Gifford obtained November as the initial month from the same informant. I [114] think there can be little question then of the identity of the constellations and the correctness of Gifford's calendar. A confirmation of this solution appears if Luiseño Nukulishpo-ma, his hand, refers to the same star or constellation. This is Arcturus, by Kroeber's identification,[1] a star which rises in the morning in early November. Certainty is added by an identification of Diegueño Buzzard, which rises in the morning in the third month (January), with Luiseño Yungavish, buzzard. The latter Kroeber gives as Altair, which does rise in the morning in early January.

The configuration of Havasupai *Coyote and Pole* agrees with Southern Diegueño *Cĭlŭk* (which I reproduce from my field notes). (Fig. 30bc) Furthermore both rise in December, if my Diegueño calendar is correct, which is unlikely. Nevertheless, the fact that the constellations figure [805]

[1] *Handbook*, 383.

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171 821 [905] only in the early months of both calendars is presumptive evidence of historic connection.

There are some data on the identity of another group in this region. The Havasupai may know the cluster, but I did not record it. This appears to be the three stars of Orion's Belt, called *Mountain Sheep* by Yavapai, Mohave, Yuma, Southern and Northern Diegueño, and *Hulaish* or *Hula'chum* by Luiseño. I think Trippel is mistaken in identifying *A-mau* (presumably mountain sheep) with the Great Bear; there is no obvious triad in that constellation. Waterman doubtfully questions the identification of the Northern Diegueño group with Orion. Southern Diegueño *Mountain Sheep* is probably the same group, which makes it impossible for *Cïlûk* to be the Belt.

211 905 171 In our area the quipu or knotted string record is a formal accompaniment of an invitation to a gathering; one knot is cut off or untied for each day that elapses until the event. Beside the Havasupai, Walapai, and Navaho, this must have been in general use among the Pueblos for it figured in the Pueblo rebellion of 1680.[1] There is also a mythical reference to the device among the Zuñi.[2] The Miwok and the Northern and Southern Maidu have invitation strings identical with these.[3] The Huichol knot strings to keep count of days, untying a knot for each day elapsed. They also enumerate lovers by knotting cords.[4] As a mnemonic device the knotted string is also known to some Mission Indians, the Palonies (a subdivision of the Chemehuevi), the Klallam, Yakima, the Interior Salish of Nicola Valley, B.C., the Zuñi[5], and in a variety of forms in Peru. It is conceivable that this has a continuous distribution from Peru to Canada.

[1] Bandelier, (b), 118; Hackett, 100.
[2] Cushing, (a), 17.
[3] Dixon, (a), 326, 371; Fagg, 44; Powers, 362.
[4] Lumholtz, (c), II, 139–140.
[5] Hoffman, in Reid, 28. Modern information from Ezra Gunther, Leechman and Harrington.

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the social position he makes for himself by inheritance, but the heir must have demonstrated his own ability before others will recognise that he has inherited the status. 428 554 624

There are no formal councils: most matters of importance are discussed by the groups lying about the sweatlodges waiting an opportunity to enter. Occasionally, somewhat more formal meetings are held. On August 11, 1918 two Walapai, Doctor Tommy, a shaman, and Waglaga, both elderly men, arrived. The following morning word was circulated that there would be a meeting at Captain Jim's camp. About forty adult men seated themselves in a rough semicircle, partly along a convenient bank, with the two Walapai at one end. Manakadja sat opposite the group at the center of the arc. Waglaga spoke first, then Bob, a Havasupai shaman, Doctor Tommy, Big Jim, Captain Jim, Watahomidja, and Manakadja. Neither Sinyella nor Panamida, the other two chiefs, were present. The Walapai brought an invitation to attend a mourning ceremony to be given in memory of a Walapai chief, who before he died the year previous had asked that his friends, the Havasupai, be invited. They asked who was going to the meeting. Bob replied for himself that he had just recovered from illness and was too weak to go. Big Jim, Captain Jim, and Watahomidja repeated the Walapai message and asked who was going. Manakadja also repeated it and announced that he did not intend to go. The delivery of the Walapai was almost a chant, continued as long as the breath held out. Roger, a young man, hard of hearing, seated before them, repeated their concluding words, until the speaker, taking another breath, proceeded, first repeating his own last words. Thus, Waglaga, "Something is not good"; Roger, "Not good"; Waglaga, beginning again, "Not good, but so and so . . . " Sometimes Roger would add a phrase to carry the sense forward, as "Someone is not willing"; Roger, "Not willing, but so and so is . . . "; Waglaga, "Not willing, but so and so is, and therefore . . . " Some of Roger's additions were evidently semi-humorous as they provoked laughter. The speeches of the Havasupai were more declamatory: they had no such aids.[1] At the end of every man's speech there was a chorus of approval; *hdnlgd*, good. The Walapai brought and passed about a quipu, a woolen cord six inches long, with seven knots representing the seven days until the ceremony, viz., they would start in three days, take two days on the trip, and the next day (August 18) the meeting would begin. The knotted cord was handed about and explained privately at the end of the speech making 623 623 648 623 648 805 211

[1] These speeches were not recorded.

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574 gether, and piteously begged me, by look and gesture, not to resent the liberty he had taken, or deprive him of his treasures.

764 When a man dies among them, he is bathed and painted, dressed in all his richest apparel, and laid, with his face toward the rising sun, to await the funeral ceremonials. Throughout the fields and orchards, usually with corn and sunflowers growing all around them, with vines and brambles covering them, are scattered little mounds of earth and ashes. These are the funeral pyres. Over the summit, a huge collection of [768] wood is piled, and the dead, together with his various possessions, is laid upon the pile. This is lighted by the son and heir, or nearest other relative, and, as the flames shoot up and envelop the body, he who applied the light throws all his worldly possessions, together with those he has inherited, upon the burning pyre, slaying his favorite dogs and horses, and adding them to the last sacrifice. [775] Upon the wings of the last film of smoke the soul of his father rises, to wander whither it will, — to come back, and bring the summer rain-clouds, to minister in many ways to the wants of his children; while the naked mourner sadly wends his way homeward, "to begin life anew, as did his father," he will tell you.

775 The spirits of those for whom the last offering has been neglected become unhappy and evil ghosts, which, together with the souls of the enemy whose [727] scalp has not been taken and burned, torment the living with the weird voices of the night, or the lone moanings of [754] the wind on the pine-covered mesas; or, as demons of disease and death, obey the behests of the dread sorcerer, or war against the good offices of the happier souls.

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221 They are fairly acquainted with the principal constellations, giving them
● 805 names, and regulating the planting and hunting seasons by their movements.

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